

Operation Guide 3320/3352

CASIO®

About This Manual



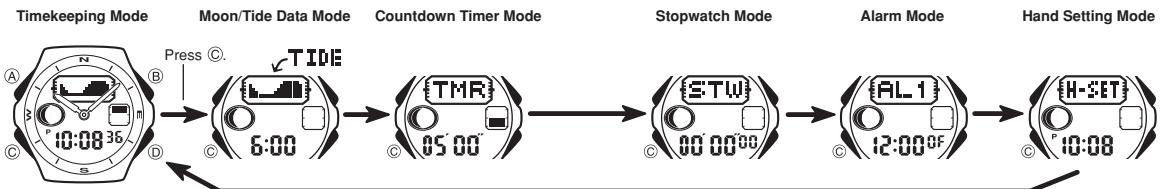
- Depending on the model of your watch, display text appears either as dark figures on a light background (Module 3320), or light figures on a dark background (Module 3352). All of the illustrations in this manual show Module 3320.
- Button operations are indicated using the letters shown in the illustration.
- All of the displays in this manual show black-on-white.
- For the sake of simplicity, the sample displays in this manual do not show the analog hands of the watch.
- Each section of this manual provides you with the information you need to perform operations in each mode. Further details and technical information can be found in the "Reference" section.

Warning!

- The longitude, lunitalid interval, Moon phase indicator and tide graph data that appear on the display of this watch are not intended for navigation purposes. Always use proper instruments and resources to obtain data for navigation purposes.
- This watch is not an instrument for calculating low tide and high tide times. The tide graph of this watch is intended to provide a reasonable approximation of tidal movements only.
- CASIO COMPUTER CO., LTD. assumes no responsibility for any loss, or any claims by third parties that may arise through the use of this watch.

General Guide

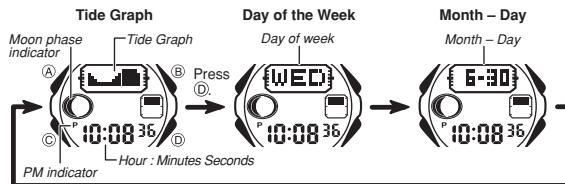
- Press **C** to change from mode to mode.
- In any mode (except when a setting screen is on the display), press **B** to illuminate the display.



Timekeeping

This watch features separate digital and analog timekeeping. The procedures for setting the digital time and analog time are different.

- In the Timekeeping Mode, you can press **D** to change the display format as shown below.



- The tide graph shows tidal movements throughout the current date. The flashing location in the tide graph indicates the tide for the current time (the digital time kept by the Timekeeping Mode).
- The Moon phase indicator shows the current Moon phase in accordance with the current date as kept in the Timekeeping Mode.

Important!

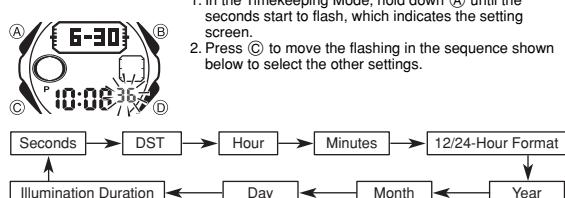
- Moon phase, tide graph data, and Moon/Tide Data Mode data will not be displayed properly unless the Timekeeping Mode current date and time settings and Home Site data are configured correctly. See "Home Site Data" for more information.

Digital Time and Date

Use the Timekeeping Mode to set and view a digital display of the current time and date. When setting the digital time, you can also configure settings for summer time (Daylight Saving Time or DST), the 12/24-hour format, and the illumination duration.

To set the digital time and date

- In the Timekeeping Mode, hold down **A** until the seconds start to flash, which indicates the setting screen.
- Press **C** to move the flashing in the sequence shown below to select the other settings.



- When the setting you want to change is flashing, use **B** and **D** to change it as described below.

Screen	To do this:	Do this:
36	Reset the seconds to 00	Press D .
DF	Toggle between Daylight Saving Time (DF) and Standard Time (DF)	Press D .
10:08	Change the hour or minutes	Use D (+) and B (-).
12H	Toggle between 12-hour (12H) and 24-hour (24H) timekeeping	Press D .
2004	Change the year	Use D (+) and B (-).
6-30	Change the month or day	
LTD	Select three seconds or one second as the illumination duration	Press D .

- Press **A** twice to exit the setting screen.

- The first press of **A** displays the GMT differential setting screen. Pressing **A** again exits the setting screen.
- Resetting the seconds only (without changing the DST, hour, or minute setting) causes the analog minute hand setting to be adjusted automatically.
- See "Digital Time Daylight Saving Time (DST) Setting" below for details about the DST setting.
- The 12-hour/24-hour timekeeping format you select in the Timekeeping Mode is applied in all modes.
- For details about illumination duration, see "Display Illumination".

Digital Time Daylight Saving Time (DST) Setting

Daylight Saving Time (summer time) advances the digital time setting by one hour from Standard Time. Remember that not all countries or even local areas use Daylight Saving Time.

To toggle the Timekeeping Mode digital time between DST and Standard Time

- In the Timekeeping Mode, hold down **A** until the seconds start to flash, which indicates the setting screen.
- Press **C** once to display the DST setting screen.
- Press **D** to toggle between Daylight Saving Time (DF displayed) and Standard Time (DF displayed).
- Press **A** twice to exit the setting screen.

- The DST indicator appears on the Timekeeping, Moon/Tide Data, Alarm, and Hand Setting Mode screens to indicate that Daylight Saving Time is turned on. In the case of the Moon/Tide Data Mode, the DST indicator appears on the Tide Data screen only.

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Home Site Data

Tide graph data will not be displayed properly unless Home Site data (GMT differential, longitude, and lunitalid interval) is configured correctly.

- The GMT differential is the time difference of the time zone where the site is located and Greenwich Mean Time.
- The lunitalid interval is the time elapsing between the Moon's transit over a meridian and the next high tide at that meridian. See "Lunitalid Interval" for more information.
- This watch displays lunitalid intervals in terms of hours and minutes.
- The "Site/Lunitalid Interval Data List" provides GMT differential, longitude, and lunitalid interval information around the world.
- The following is the initial factory default Home Site data (Tokyo, Japan) when you first purchase the watch, and whenever you have the battery replaced. Change these settings to match the area where you normally use the watch.

GMT differential (+9.0); Longitude (East 140 degrees); Lunitalid interval (5 hours, 20 minutes)

To configure Home Site data



- In the Timekeeping Mode, hold down **A** until the seconds start to flash, which indicates the setting screen.
- Press **A** again to display the GMT differential setting screen.
- Press **C** to move the flashing in the sequence shown below to select other settings.



- When the setting you want to change is flashing, use **D** and **B** to change it as described below.

Setting	Screen	Button Operations
GMT Differential	GMT + 9.0	Use D (+) and B (-) to change the setting. • You can specify a value in the range of -11.0 to +14.0, in 0.5-hour units.
Longitude	LON 140° E	Use D (+) and B (-) to change the setting. • You can specify a value in the range of 179°W to 180°E, in 1-degree units.
Lunitalid Interval Hours, Minutes	INT 5:20	Use D (+) and B (-) to change the setting.

- When the digital time DST setting is on, the GMT differential can be set in a range of -10.0 to +15.0 in 0.5-hour units.
- Press **A** to exit the setting screen.

Setting the Analog Time

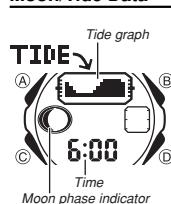
Perform the procedure below when the time indicated by the analog hands does not match the time of the digital display.

To adjust the analog time



- In the Timekeeping Mode, press **C** five times to enter the Hand Setting Mode.
- Hold down **A** until the current digital time starts to flash, which indicates the analog setting screen.
- Press **D** to advance the analog time setting by 20 seconds.
• Holding down **D** advances the analog time setting at high speed.
- If you need to advance the analog time setting a long way, hold down **D** until the time starts advancing at high speed, and then press **B**. This locks the high-speed hand movement, so you can release the two buttons. High-speed hand movement continues until you press any button. It will also stop automatically after the time advances 12 hours or if an alarm (daily alarm, Hourly Time Signal, or countdown beeper) starts to sound.
- Press **A** to exit the setting screen.
- The watch will automatically adjust the minute hand slightly to match its internal second count when you exit the setting screen.
- To return to the Timekeeping Mode, press **C**.

Moon/Tide Data



Moon/tide data lets you view the Moon age and Moon phase for a particular date, and tidal movements for a particular date and time for the Home Site.

- If you suspect that the Moon/tide data is not correct for some reason, check the Timekeeping Mode data (current time, date, and Home Site settings), and make changes as required.
- See "Moon Phase Indicator" for information about the Moon phase indicator and "Tide Graph" for information about the tide graph.
- All of the operations in this section are performed in the Moon/Tide Data Mode, which you enter by pressing **C**.

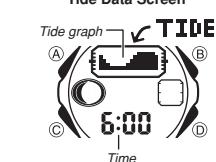
Tide Data Screen

To view current Moon/Tide Mode data

In the Moon/Tide Data Mode, each press of **A** toggles between the Tide Data screen and the Moon Data screen.

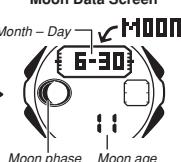
- The tide graph shows tidal movements throughout the current date. The flashing location in the tide graph indicates the tide for the currently displayed time. The Moon data screen shows the Moon age and Moon phase for the current date.

Tide Data Screen



Press **A**.

Moon Data Screen



Moon phase indicator
Moon age

- While the Tide Data screen is displayed, pressing **D** advances to the next hour.
- While the Moon Data screen is displayed, pressing **D** advances to the next day.
- You can also specify a date for tide data or Moon data. For details, see "To specify a date" below.
- Whenever you enter the Moon/Tide Data Mode, the screen (Moon Data or Tide Data) that was displayed when you last exited the mode appears first. The initial Tide Data screen shows the data for the 6 a.m. for the current date, while the Moon Data screen shows the data for the current date.

To specify a date



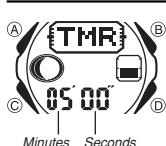
- In the Moon/Tide Data Mode, hold down **A** until the year setting starts to flash, which indicates the setting screen.
- Press **C** to move the flashing in the sequence shown below to select the other settings.



- While a setting is flashing, use **D** (+) or **B** (-) to change it.
• You can specify a date in the range of January 1, 2000 to December 31, 2039.

- Press **A** to exit the setting screen.
- Press **A** to toggle between the Moon Data screen and Tide Data screen.

Countdown Timer



The countdown timer can be set within a range of one minute to 60 minutes. An alarm sounds when the countdown reaches zero. The countdown timer also has an auto-repeat feature and a progress beeper that signals the progress of the countdown.

- All of the operations in this section are performed in the Countdown Timer Mode, which you enter by pressing **C**.

Configuring the Countdown Timer

The following are the settings you should configure before actually using the countdown timer.

Countdown start time; Auto-repeat on/off; Progress beeper on/off

- See "To configure the countdown timer" for information about setting up the timer.

Auto-repeat

When auto-repeat is turned on, the countdown automatically restarts from the countdown start time when it reaches zero. If left running, the countdown is repeated a total of eight times, after which it stops automatically.

When auto-repeat is turned off, the countdown stops when it reaches zero and the display shows the original countdown start time.

- Pressing **D** while an auto-repeat countdown is in progress pauses the current countdown. You can resume the auto-repeat countdown by pressing **D**, or you can press **A** to reset to the countdown time starting value.

Countdown Timer Beep Operations

The watch beeps at various times during a countdown so you can keep informed about the countdown status without looking at the display. The following describes the types of beeper operations the watch performs during a countdown.

Countdown End Beeper

The countdown end beeper lets you know when the countdown reaches zero.

- When the progress beeper is turned off, the countdown end beeper sounds for about 10 seconds, or until you press any button to stop it.
- When the progress beeper is turned on, the countdown end beeper sounds for about one second.

Progress Beep

When the progress beeper is turned on, the watch uses beeps to signal countdown progress as described below.

- Starting from five minutes before the end of the countdown, the watch emits four short beeps at the top of each countdown minute.
- 30 seconds before the end of the countdown, the watch emits four short beeps.
- The watch emits a short beep for each of the last 10 seconds of the countdown.
- If the countdown start time is six minutes or greater, the watch emits a short beep for each second of the final 10 seconds before the five-minute point is reached. Four short beeps are emitted to signal when the five-minute point is reached.

To configure the countdown timer



- While the countdown start time is on the display in the Countdown Timer Mode, hold down **A** until the current countdown start time starts to flash, which indicates the setting screen.

- If the countdown start time is not displayed, use the procedure under "To use the countdown timer" to display it.

- Press **C** to move the flashing in the sequence shown below to select other settings.



- When the setting you want to change is flashing, use **B** and **D** to change it as described below.

Setting	Screen	Button Operations
Start Time	05:00	Use D (+) and B (-) to change the setting. • You can set a start time in the range of 1 to 60 minutes in 1-minute increments.
Auto-repeat	OFF	Press D to toggle auto-repeat on (ON) and off (OFF displayed).
Progress Beeper	ON	Press D to toggle the progress beeper on (ON) and off (OFF).

- Press **A** to exit the setting screen.

- You can also perform steps 1 and 2 of the above procedure whenever you need to view the current auto-repeat and progress beeper settings.

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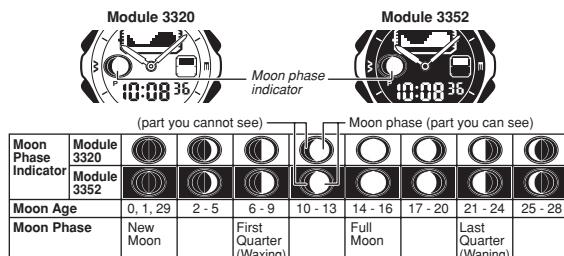
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Reference

This section contains more detailed and technical information about watch operation. It also contains important precautions and notes about the various features and functions of this watch.

Moon Phase Indicator

The Moon phase indicator of this watch indicates the current phase of the Moon as shown below.



- The Moon phase indicator shows the Moon as viewed at noon from a position in the Northern Hemisphere looking south. Note that at times the image shown by the Moon phase indicator may differ from that of the actual Moon in your area.
- The left-right orientation of the Moon phase is reversed when viewing from the Southern Hemisphere or from a point near the equator.

Moon Phases and Moon Age

The Moon goes through a regular 29.53-day cycle during which it appears to wax and wane due to how the Sun illuminates the Moon and the relative positioning of the Earth, Moon, and Sun. The greater the angular distance between the Moon and the Sun,* the more we see illuminated.

* The angle to the Moon in relation to the direction at which the Sun is visible from the Earth.

This watch performs a rough calculation of the current Moon age starting from day 0 of the moon age cycle. The actual Moon age average cycle is 29.53 days, but this can vary anywhere from -1 day to +1 day for specific months. Since this watch performs calculations using integer values only (no fractions), the margin for error of the displayed Moon age is ± 2 days.

Tide Graph

The Tide Graph screen shows one of three different waveforms to indicate spring tide, intermediate tide, or neap tide as the current tide pattern. In addition, the current tide level is indicated within the displayed tide pattern as a column of flashing dots.



- Spring Tide: Tides occurring at new and full Moons, when the range between high and low tide is greatest.
- Neap Tide: Tides occurring at first and third Moon quarters, when the range between high tide and low tide is smallest.
- Intermediate Tide: Indicates tide at the midpoint between spring tide and neap tide.

Tidal Movements

Tides are the periodic rise and fall of the water of oceans, seas, bays, and other bodies of water caused mainly by the gravitational interactions between the Earth, Moon and Sun. Tides rise and fall about every six hours. The tide graph of this watch indicates tidal movement based on the Moon's transit over a meridian and the lunital interval. The lunital interval differs according to your current location, so you must specify a lunital interval in order to obtain the correct tide graph readings.

Lunital Interval

Theoretically, high tide is at the Moon's transit over the meridian and low tide is about six hours later. Actual high tide occurs somewhat later, due to factors such as viscosity, friction, and underwater topography. Both the time differential between the Moon's transit over the meridian until high tide and the time differential between the Moon's transit over the meridian until low tide are known as the "lunital interval". When setting the lunital interval for this watch, use the time differential between the Moon's transit over the meridian until high tide.

Graphic Area

The following describes the information indicated by the graphic area in each mode.



Mode	Graphic Area
Timekeeping	Timekeeping Mode seconds
Moon/Tide Data	No indication
Countdown Timer	Countdown time minutes
Stopwatch	Stopwatch time seconds
Alarm	No indication
Hand Setting	No indication

Auto Return Feature

If you leave a screen with flashing digits on the display for two or three minutes without performing any operation, the watch automatically exits the setting screen.

Scrolling

The (R) and (D) buttons are used in various modes and setting screens to scroll through data on the display. In most cases, holding down these buttons during a scroll operation scrolls through the data at high speed.

Timekeeping

- Resetting the seconds to 00 while the current count is in the range of 30 to 59 causes the minutes to be increased by 1. In the range of 00 to 29, the seconds are reset to 00 without changing the minutes.
- With the 12-hour format, the P (PM) indicator appears on the display for times in the range of noon to 11:59 p.m. and no indicator appears for times in the range of midnight to 11:59 a.m.
- With the 24-hour format, times are displayed in the range of 0:00 to 23:59, without any indicator.
- The year can be set in the range of 2000 to 2039.
- The watch's built-in full automatic calendar makes allowances for different month lengths and leap years. Once you set the date, there should be no reason to change it except after you have the watch's batteries replaced.

Illumination Precautions

- The electro-luminescent panel that provides illumination loses power after very long use.
- Display illumination may be hard to see when viewed under direct sunlight.
- The watch may emit an audible sound whenever the display is illuminated. This is due to vibration of the EL panel used for illumination, and does not indicate malfunction.
- Illumination automatically turns off whenever an alarm sounds.
- Frequent use of the light shortens the battery life.

Auto light switch precautions

More than 15 degrees
too high

- Avoid wearing the watch on the inside of your wrist. Doing so causes the auto light switch to operate when it is not needed, which shortens battery life. If you want to wear the watch on the inside of your wrist, turn off the auto light switch feature.
- Illumination may not turn on if the face of the watch is more than 15 degrees above or below parallel. Make sure that the back of your hand is parallel to the ground.
- Illumination turns off in about one second or three seconds, even if you keep the watch pointed towards your face.
- Static electricity or magnetic force can interfere with proper operation of the auto light switch. If illumination does not turn on, try moving the watch back to the starting position (parallel with the ground) and then tilt it back towards you again. If this does not work, drop your arm all the way down so it hangs at your side, and then bring it back up again.
- Under certain conditions, illumination may not turn on until about one second after you turn the face of the watch towards you. This does not necessarily indicate malfunction of the auto light switch.
- You may notice a very faint clicking sound coming from the watch when it is shaken back and forth. This sound is caused by mechanical operation of the auto light switch, and does not indicate a problem with the watch.

Site/Lunitidal Interval Data List

Site	GMT Differential		Longitude	Lunitidal Interval
	Standard Time	DST/Summer Time		
Anchorage	-9.0	-8.0	149°W	5:40
Bahamas	-5.0	-4.0	77°W	7:30
Baja, California	-7.0	-6.0	110°W	8:40
Bangkok	+7.0	+8.0	101°E	4:40
Boston	-5.0	-4.0	71°W	11:20
Buenos Aires	-3.0	-2.0	58°W	6:00
Casablanca	+0.0	+1.0	8°W	1:30
Christmas Island	+14.0	+15.0	158°W	4:00
Dakar	+0.0	+1.0	17°W	7:40
Gold Coast	+10.0	+11.0	154°E	8:30
Great Barrier Reef, Cairns	+10.0	+11.0	146°E	9:40
Guam	+10.0	+11.0	145°E	7:40
Hamburg	+1.0	+2.0	10°E	4:50
Hong Kong	+8.0	+9.0	114°E	9:10
Honolulu	-10.0	-9.0	158°W	3:40
Jakarta	+7.0	+8.0	107°E	0:00
Jeddah	+3.0	+4.0	39°E	6:30
Karachi	+5.0	+6.0	67°E	10:10
Kona, Hawaii	-10.0	-9.0	156°W	4:00
Lima	-5.0	-4.0	77°W	5:20
Lisbon	+0.0	+1.0	9°W	2:00
London	+0.0	+1.0	0°E	1:10
Los Angeles	-8.0	-7.0	118°W	9:20
Maldives	+5.0	+6.0	74°E	0:10
Manila	+8.0	+9.0	121°E	10:30
Mauritius	+4.0	+5.0	57°E	0:50
Melbourne	+10.0	+11.0	145°E	2:10
Miami	-5.0	-4.0	80°W	7:30
Noumea	+11.0	+12.0	166°E	8:30
Pago Pago	-11.0	-10.0	171°W	6:40
Palau	+9.0	+10.0	135°E	7:30
Panama City	-5.0	-4.0	80°W	3:00
Papeete	-10.0	-9.0	150°W	0:10
Rio De Janeiro	-3.0	-2.0	43°W	3:10
Seattle	-8.0	-7.0	122°W	4:20
Shanghai	+8.0	+9.0	121°E	1:20
Singapore	+8.0	+9.0	104°E	10:20
Sydney	+10.0	+11.0	151°E	8:40
Tokyo	+9.0	+10.0	140°E	5:20
Vancouver	-8.0	-7.0	123°W	5:10
Wellington	+12.0	+13.0	175°E	4:50

*Based on data as of 2003.